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Caltrans Division of Research, Innovation and System Information

Research Results

# Collecting Pedestrian Infrastructure and Volume Data

***New database addresses the lack of injury and facility data for pedestrians***

Transportation Safety and Mobility

NOVEMBER 2014

**Project Title:**
Developing a Plan to Collect Pedestrian Infrastructure and Volume Data for Future Incorporation into Caltrans Accident Surveillance and Analysis System Database

**Task Number:** 2302

**Start Date:** November 1, 2011

**Completion Date:** May 31, 2014

**Product Category:** New or improved decision support tool, simulation, model, or algorithm (software); new or improved manual, handbook, guidelines, or training

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## WHAT WAS THE NEED?

Caltrans and other state agencies maintain various data sources relevant to traffic safety, such as information on infrastructure, traffic volume, collisions, and violations. Planners, engineers, enforcement officials, educators, policy makers, advocates, and the general public rely on this data to develop countermeasures to reduce injuries and fatalities. However, data regarding "active transportation"—walking, biking, and transit—and related injuries and fatalities is not being collected.

The Caltrans Traffic Accident Surveillance and Analysis System – Transportation Systems Network (TASAS-TSN) database combines collision data with traffic volumes and roadway inventory of the entire state highway system, about 15,000 miles, but it is primarily vehicle-oriented and contains little information about infrastructure that serves pedestrians or bicyclists. It also does not include data about traffic volumes for these modes, despite the fact that facilities for pedestrians and bicyclists are available on many parts of the state transportation system. All transportation improvements need to be viewed as opportunities to enhance safety, access, and mobility for all travelers in California.

## WHAT WAS OUR GOAL?

The goal was to evaluate the feasibility and cost of developing a supplementary database for pedestrian and bicycle infrastructure and volume data that could be incorporated into the TASAS-TSN database.

*Photo courtesy of www.pedbikeimages.org/Elly Blue*

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**Caltrans provides a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.**

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## WHAT DID WE DO?

Caltrans, in partnership with the University of California, Berkeley Safe Transportation Research and Education Center, developed a database architecture that can incorporate data collected in the field and through computer-generated remote imagery analysis. The protocols were tested in Districts 4 and 11. The pilot deployment involved using the remote computer imagery analysis technique on 100 miles of state highways and field-based data collection on 7 miles. The researchers tracked the time for both methods to estimate the costs for the entire state highway system. The team also worked with Fehr & Peers transportation consultants to analyze whether the commercial platform Miovision could accommodate data from automated collection sources for the volume database.

## WHAT WAS THE OUTCOME?

Caltrans now has methods that it can use to collect key data about two important modes of transportation, walking and bicycling. To complete the data collection, it was estimated that would take about 4,000 hours using remote analysis of computer imagery and 9,000 hours using field observation. The researchers recommend primarily using remote image analysis and supplementing it with field checks when site visits are already scheduled for other purposes.

| Roadway class | Mileage (mi) | Computer (hr) | Field (hr) |
|---|---|---|---|
| Urban freeways | 3,533 | 157 | 59 |
| Urban freeways < 4 lanes | 28 | 1 | 1 |
| Urban two lane roads | 868 | 579 | 723 |
| Urban multilane divided non-freeways | 1,081 | 883 | 4,864 |
| Urban multilane undivided non-freeways | 176 | 86 | 792 |
| Rural freeways | 2,879 | 101 | 48 |
| Rural freeways < 4 lanes | 6 | 1 | 1 |
| Rural two lane roads | 12,422 | 1,402 | 1,470 |
| Rural multilane divided non-freeways | 1,125 | 656 | 718 |
| Rural multilane undivided non-freeways | 407 | 141 | 260 |
| Total | 22,525 | 4,006 | 8,935 |

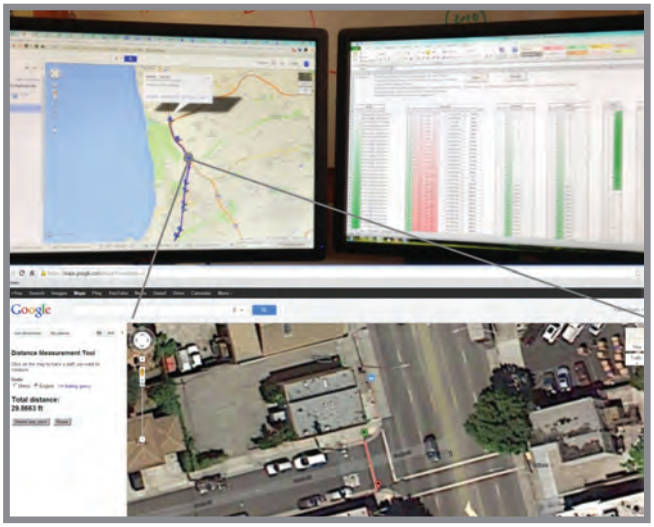
*Estimated time required to collect pedestrian and bicyclist infrastructure data across the entire state highway system.*

## WHAT IS THE BENEFIT?

Biking and walking are integral elements of the transportation system that require distinct measures to improve safety and mobility. Systematic analysis of the needs and safety measures for pedestrian and bicycle facilities is necessary for Caltrans to improve the safety and effectiveness of the state transportation system for all travelers. The database and collection methods can also serve as a model for other agencies and jurisdictions, such as cities, counties, and metropolitan regions, to acquire similar data for local roads.

## LEARN MORE

To view the complete report:
*www.dot.ca.gov/newtech/researchreports/reports/2014/final_report_task_2302.pdf*




*The remote-analysis method uses computer imagery and a customized macro tool to collect infrastructure data.*